



Natural Heritage & Endangered Species Program

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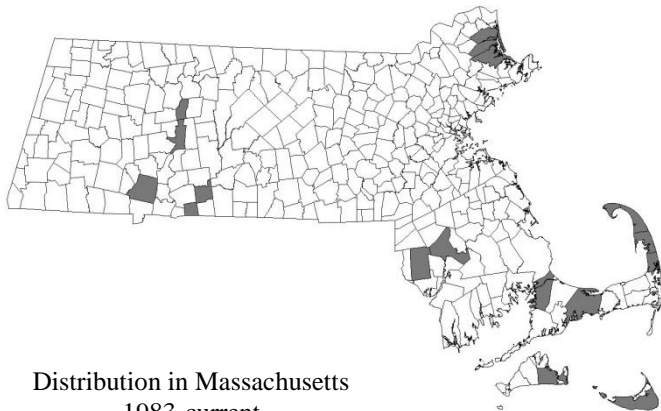
Massachusetts Division of Fisheries & Wildlife

Eastern Spadefoot *Scaphiopus holbrookii*

State Status: **Threatened**
Federal Status: **None**

DESCRIPTION: The Eastern Spadefoot, only 1.75-2.25" (4.4-5.7 cm) long, is a short-legged, squat, big-headed toad with unmistakable cat-like, vertically elliptical pupils. The grayish or blackish-brown with olive skin is fairly smooth and scattered with small warts. Two yellowish lines originate from each eye and run down the back to form a lyre-shaped pattern. Another light line runs along each side of the body. The toad's name comes from the horny, sharp-edged, sickle-shaped spade on the inner surface of the hind foot. It belongs to a primitive amphibian family that is neither a true frog nor a true toad.

SIMILAR SPECIES: The Eastern Spadefoot is the only toad in its family occurring east of the Mississippi River. It is distinguished from the true toads by its smoother skin, vertically elliptical pupils, and single sharp-edged spade on each hind foot.



Distribution in Massachusetts
1983-current
Based on records in
Natural Heritage Database



HABITAT: This burrowing species requires dry, sand or sandy loam soils characteristic of Pitch Pine barrens, coastal oak woodlands, or sparse shrub growth, interspersed with temporary ponds. It prefers areas with leaf litter, and may be found in farmland areas. Colonies may occur within the floodplains of major rivers.

LIFE HISTORY: The Eastern Spadefoot is the most fossorial species of frog or toad in Massachusetts. It burrows up to eight feet below the ground's surface to hibernate during the cold months and to avoid desiccation during the rest of the year. It backs down into its burrow, digging with the hind feet and covering itself over with the fore feet. Spadefoots are secretive and nocturnal; activity peaks just after sundown and before sunrise. In the summer months, individuals remain in their burrows an average of 5-9 days between feedings.

In the warmer months, from April to September, the Spadefoot comes up to breed after prolonged warm and heavy rains. They emerge uttering explosive, low-

A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

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pitched grunts, short in duration and repeated at brief intervals. Home range movements are estimated to be an average of 108 sq. ft./10 sq. m., 90% of which falls within an area of 67 sq. ft./6.2 sq. m. Spadefoots have been recaptured in the same ranges after 5 years. Individuals may live for several decades. Adults apparently produce noxious or distasteful skin secretions, because native predators usually ignore them.

Colonial breeding is initiated by heavy rainfall in April or May and lasts until August or September. This one- or two-night phenomenon has been likened to an orgy of raucous squawks and frantic courtship. Spadefoots breed in vernal pools. The adhesive eggs, laid in masses or strings of 1000-2500, are draped over submerged twigs or grass, where they hatch in 5 to 15 days.

Metamorphosis of larvae to adults is said to coincide with pond conditions; longer pond life results in longer larval life. In Essex County, a natural population metamorphosed in less than 4 weeks. Sexual maturity is reached during the second year after metamorphosis, males at 15 months and females at 19 months. Larvae feed on plankton for the first few days, later becoming vigorously carnivorous and sometimes cannibalistic. Adults eat flies, spiders, crickets, caterpillars, true bugs, other ground-dwelling arthropods, earthworms, snails, moths, and small vertebrates, such as salamanders.

RANGE: The Eastern Spadefoot toad is found from Massachusetts to New York, south to eastern Florida and some of the Keys, west through Pennsylvania, through the southern Great Lakes region, to Arkansas and south to Louisiana. The species is absent from the higher elevations of the Appalachians and the Everglades.

STATUS: Only 32 current populations have been verified since 1982. Museum specimens and literature attest to the former widespread, if not abundant, status of the species. Several factors contribute to the rarity of the species. Plum Island is the northern limit of the species' range. Destruction of suitable habitat continues to limit its numbers; Spadefoot populations have been extirpated by development from Middlesex County, inland Essex County and parts of Martha's Vineyard. The species is vulnerable to pesticides, and many individuals are killed crossing roads, especially during the breeding season.

Adapted from: Lazelle, J. D., Jr. 1987. Eastern Spadefoot. In T. W. French and J. E. Cardoza (eds). Endangered, Threatened, and Special Concern Vertebrates of Massachusetts. Massachusetts Division of Fisheries and Wildlife.

Updated 2015

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